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Original article

Stress of grade 9 students taking an extra course for the admission examination of Triam Udom Suksa School and Mahidol Wittayanusorn School

Wijittaporn Somchai[1], Buranee Kanchanatawan[2,*]

[1]Program in Mental Health, Department of Psychiatry, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand
[2]Department of Psychiatry, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

Abstract

Background: Students are stressed for various reasons during their studies. Major stress for grade 9 students is the admission examination for the potential high school. Thus, they prepared themselves by taking an extra course.
Objective: This study aimed to investigate the level of stress and the relationship of factors related to stress among the students in grade 9 who prepared themselves for high school, Triam Udom Suksa School and Mahidol Wittayanusorn School by taking extra courses.
Methods: A total of 312 students in grade 9, who took an extra course for the admission examination of Triam Udom Suksa School and Mahidol Wittayanusorn School, were recruited. The measurements were 5-demographic sections and the Suanprung Stress Test (revised).
Results: Most of the grade 9 students from the recent study were female. Their mean age was 14.7 years. Most of them had severe stress levels (62.8%) followed by high-stress levels (14.7%). The statistically significant factors that were relevant to students' stress included female students, the family had debt, studying affect stress, moderated satisfaction levels with one's preparation, and reasons for choosing schools.
Conclusion: Most students had stress. The results showed that competitive exams for the higher potential high school had meaning to them especially encouraging their future. Thus, oneself, family, friends, teachers, and social expectations will push more stress on their academic performance. Relevant people should be concerned about students' mental health, especially stress.

Keywords: Adolescent mental health, extra course, high school student, Mahidol Wittayanusorn school, stress, Triam Udom Suksa School.

***Correspondence to: Buranee Kanchanatawan,** Department of Psychiatry, Faculty of Medicine, Chulalongkorn University, Bangkok 10330, Thailand.
E-mail: drburanee@gmail.com.
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While stress is often seen as a negative experience, it is a normal part of everyday life. Some people are motivated by stress and can use it as a source of energy to move forward and achieve their goals. It can encourage and motivate people to improve their attitude and performance. [1] Stress is a common experience among students, and it can be both positive and negative as mentioned before. While some stress can be motivating and help students achieve their goals, excessive stress can lead to emotional imbalance and negative consequences. There are several sources of student experience stress including examinations and outcomes, studying hard for examinations and assignments, amount to learn, worry about the future, need to do well imposed by others, and self-imposed need to do well. Moreover, students who put in a highly competitive environment and academic stress may be correlated with age, gender, and university. [2]

Academic matters are an important source of chronic and sporadic stress for students in both Western and Asian countries. One of the main sources of stress for students is the pressure to earn good grades and obtain a degree. Forty-two percent of them worried about grades every day. [3] Sixty-six percent reported feeling stressed about poor grades and 59.0% reported they often worry that taking the exams will be difficult. [4] This pressure can be particularly high for students who are in a period of competitive examinations or who come from families with high expectations for academic success. In addition to academic pressure, students may also experience stress from other sources, such as excessive homework, unclear assignments, and uncomfortable classroom environments. According to a previous study that found higher levels of stress experienced over a prolonged period of pressure can cause mental and physical problems. [2] Thus, bearing the expectation from themselves and their parents increased the higher level of stress.

Early adolescents or teenagers face various changes in their life such as physical and mental changes, family, friends, teachers, school, and social. Environments easily trigger increasing stress such as learning competition, future study planning, and occupation choosing. Education is important for their future occupation. Most students are expected by their families to study in areas that they don't like or do not fit them. Those increased higher stress. [5] The effects of stress impair not only psychological well-being, self-esteem, and self-efficacy but also lead to worse performance among students. [6 - 8] Stress affected academic achievement and made learning more difficult, in worse cases, it can cause one to drop out of school. Moreover, the current study focused on grade 9 students who were under pressure of competitive examination and school transition. A previous study found these situations also impacted emotional health outcomes and behaviors and this transition was affected by other factors, e.g., family, peers, and teachers. [9]

Stress is different at every age, school age, especially in high school, as students pay more attention to admission examinations and careers in the future. [10] Also, on gender differences, female students had found a higher level of mental health problems across the compulsory school than male students' counterparts. Högberg B, *et al*. collected data using repeated cross-sectional data between the years 1993 - 2017 in Swedish students and they found that the effect of stress on symptoms was strong and tended to increase among girl students. [11]

The grade 9 students in Thailand have competitively to reach their goal by admission to the potential high school. Thus, they prepared themselves in both compulsory and tutoring schools to have good grades and enhance their knowledge in each subject. Ninth-grade students have to reach their initial goals by attending admission to further high schools, especially famous ones. Triam Udom Suksa School and Mahidol Wittayanusorn School are significant options for their future. Mahidol Wittayanusorn School is Science and Mathematics school and Triam Udom Suksa School has both Science and Mathematics also Language-Arts Program. Both schools have very high intensity of the qualifying examination. Mainly purpose to attend those schools due to potential, teaching, technology, leading university, forced by parents, explore the exams, or following their companion. Therefore, students from many cities in Thailand intend to participate in this competitive examination. Although, both schools have very high intensity of the qualifying examination. The number of students admitted is less than the number of students applying for the exam. As a result, students have to prepare themselves for the serious competition. Pressure from the incidents turned into a high level of stress.

The results from previous studies in Thailand focused mainly on grade 12 students' stress that aims to admission to the university than grade 9 students that rarely explored. Thus, we aimed to study students'

stress among grade 9 students who took the extra course because they greatly prepared themselves to admission to Triam Udom Suksa School and Mahidol Wittayanusorn School. The results from the current study should be a guideline for educators to handle the students' stress and create a crucial strategy.

Materials and methods

Subjects and study design

Subjects were grade 9 students who took an extra course for the admission examination to Triam Udom Suksa School and Mahidol Wittayanusorn School. The tutoring schools were located in downtown Bangkok: part of the Siamscape and Maboonkrong (MBK) building that was convenient to transport and had the interesting subjects to increase potential. The current study focused on 9 tutoring schools; 4 schools located in the Siamscape building including the study group, Social Studies by Kru Beer, Genius by Kru Joy, and Ban Kamnuan, and five schools located in the MBK building including Thai by Kru Golf, Super K, On-demand, Premier prep, and Society by Kru Phon. A greater number of students from many cities of the country registered to study in the evening time or all day in the summer semester. The authors did not know the exact number of students who took the extra course from nine tutoring schools, so, we calculated the sample size from a non-probability sampling technique. The formulation was $n = z^2 p (1 - p) / d^2$; z = 1.96, P = 0.5, and d = 0.01.The result after calculating was 97 samples and we escalated 20.0% from the sample size to prevent any missing data. Finally, the sample size was 117 students. The inclusion criteria were grade 9 students who took an extra course for the admission examination to Triam Udom Suksa School and Mahidol Wittayanusorn School and consented by their parents.

A descriptive cross-sectional study was constructed and made available in electronic form (Google form). Data were collected almost one year from March 25, 2022 - February 24, 2023. The study has been approved by the Institutional Review Board, the Faculty of Medicine, Chulalongkorn University, (IRB no. 916/64). A total of 312 students completed the questionnaire and passed all criteria to be included in the study. No one was excluded for further analysis.

Measurements

General demography

The student's demographics were gathered from five sections. The personal section included gender, age, and underlying diseases. The family section included a number of brotherhoods, average family income (THB/month), family debt, and relationship with the family. The studying section included junior secondary school types, GPAX, scholarship, average hours spent on extra courses (hour/week), studying subjects, high school field, study affect to stress, and the most stressful time of studying. The competitive examination included the selected schools for pursuing high school education, reasons for selected schools, and satisfaction with one's preparation. Lastly, the friend and environment section included wanting to study at a high school similar to a friend and relationship with friends.

Suanprung stress test (revised edition) (SST-22) was developed from the original SST-20 items [12] that adjusted the construct to evaluate stress among Thais. The conceptual framework included biological, psychological, and social aspects of stress. The subjects considered each item that congruence to the most experience by using a 5-Likert scale. Thereafter, Nimnuan C, Wongthai P. [13] revised the measurement from the original to evaluate the students' stress due to the situation change. So, they added two items including "hurry up, there's not enough time" and "society was violent or unsafe". From 20 items of the original version turned into 22 items. Cronbach's alpha coefficient for the revised version was 0.90.

The SST-22 items considered from their experience within one month ago, each item was evaluated on two dimensions: frequency (0 = never, 1 = sometime, and 2 = often) and stress levels (5-Likert scale; 1 = non-stressful, 2 = mild stressful, 3 = moderate stressful, 4 = very stressful, and 5 = most stressful). The total score was calculated from the multiplicative of two dimensions: frequency and stress levels. Thus, each item had a range score between 0 to 10. The total score was 220 when 0 - 22 was mild levels, 23 - 38 moderated levels, 39 - 56 high levels, and more than 56 was severe.

Statistical analysis

Collected data were divided to analyze by using descriptive and inferential statistics. SPSS program version 25 was applied. Demographics were described by the number, percentage, mean, standard deviation (SD), median, mode, minimum, and maximum. Chi-square test examined the related factors with stress. Binary logistic regression was applied to the related factors which significantly predict students' stress. $P < 0.05$ was determined as a statistical significance level.

Results

The 312 students from grade 9 students who took an extra course for the admission examination of Triam Udom Suksa School and Mahidol Wittayanusorn School were recruited to the current study. The vast majority of them were female. Their age ranged between 14 - 15 years old. 16.7% had underlying diseases, i.e., allergy. Family information showed three-quarters of students had at least one brotherhood. Despite high average family income, some of their family was in debt (34.3%). The students had a great rated relationship with the family.

Almost all of them currently studied in coeducation schools and did not receive a scholarship. More than half reported a higher grade. However, over 20.0% had a lower accumulated grade point average (GPAX) than 3.8. Mathematics was the most selected subject for the extra course. Meanwhile, Thai subjects and social studies resulted in contrast; 90.4% preferred the high school program Science-Mathematics Program; 82.7% indicated that their study affected their stress. The most stressful time of studying was reading and studying by oneself, studying at tutoring school, and school, respectively.

Competitive examination section, the most selected schools for pursuing high school education were Triam Udom Suksa School, Mahidol Wittayanusorn School, and other schools, respectively. The reasons for selecting schools were a good chance for university entrance exams, famous schools, family recommendations to take the entrance exam, and taking an exam or coming to take the exam with friends, respectively. Satisfy levels with one's preparation averaged 6.2. Friends and environment section, fifty percent wanted to study at a high school similar to their friend. Thirty-nine percent had higher relationship with friends than average (**Table 1**).

Table 1. Student's demographics on five sections.

Factors	N	Percentage
Personal section		
Gender		
Female	220	70.5
Male	84	26.9
Others	8	2.6
Age (year)‡		
< 14	4	1.3
14	97	31.2
15	197	63.3
> 15	13	4.2
Mean = 14.7, SD = 0.6, Median = 15, Mode = 15, Min = 13, Max = 17		
Underlying disease		
No	260	83.3
Yes	52	16.7
Family section		
Number of brotherhoods‡		
None	78	25.2
1	114	36.8
2	91	29.4
>2	27	8.7
Mean = 1.2, SD = 0.9, Median = 1, Mode = 1, Min = 0, Max = 4		
Average family income (Baht/month)‡		
< 50,000	112	37.8
50,000 - 99,999	50	16.9
≥ 100,000	134	45.3
Mean = 114,693.9, SD = 132,261.6, Median = 80,000, Mode = 100,000Min = 2,000 Max = 1,000,000 (THB/month)		

Table 1. (Cont.) Student's demographics on five sections.

Factors	N	Percentage
Family debt		
No	205	65.7
Yes	107	34.3
Mean = 1,653,363, SD = 2,141,063, Median = 1,000,000, Mode = 1,000,000, Min = 10,000, Max = 10,000,000		
Relationship with family		
The least (0)	2	0.6
Less (1)	5	1.6
Little (2)	17	5.5
Much (3)	41	13.1
More (4)	91	29.2
The most (5)	156	50.0
Mean = 4.2, SD = 1.0, Median = 4.5, Mode = 5, Min = 0, Max = 5		
Study section		
Junior secondary school types		
Coeducation	232	74.4
Boy school	22	7.1
Girl school	58	18.6
GPAX‡		
< 3.70	58	18.7
3.70 - 3.79	21	6.8
3.80 - 3.89	63	20.3
3.90 - 4.00	169	54.3
Mean = 3.8, SD = 0.2, Median = 3.9, Mode = 4.0, Min = 2.5, Max = 4.0		
Scholarship		
No	285	91.4
Yes	27	8.7
N = 21, Mean = 30,062, SD = 50,242, Median = 5,000, Mode = 84,000, Min = 800, Max = 200,000		
Average hours spending on extra course (hour/week)‡		
< 33	128	41.8
33 - 64	154	50.3
> 64	24	7.8
Mean = 34.2, SD = 20.6, Median = 35.3, Mode = 40.0, Min = 2.0, Max = 98.0		
Selected subjects for extra course (more than 1 subject)		
Mathematics		
No	24	7.7
Yes	288	92.3
Physics		
No	71	22.8
Yes	241	77.2
Chemistry		
No	78	25.0
Yes	234	75.0
Biology		
No	85	27.2
Yes	227	72.8
Thai subjects		
No	176	56.4
Yes	136	43.6
Social studies		
No	175	56.1
Yes	137	43.9

Table 1. (Cont.) Student's demographics on five sections.

Factors	N	Percentage
English subjects		
No	93	29.8
Yes	219	70.2
Preference high school program		
Science-mathematics program	282	90.4
English-mathematics program	8	2.6
Language-arts program	22	7.1
Studying affect to stress		
No	54	17.3
Yes	258	82.7
The most stressful time of studying		
Studying at school	65	20.8
Studying at tutoring school	70	22.4
Reading and studying by oneself	177	56.7
Competitive examination section		
Selected schools for pursuing high school education (more than 1 choice)		
Triam Udom Suksa School		
No	33	10.6
Yes	279	89.4
Mahidol Wittayanusorn School		
No	137	43.9
Yes	175	56.1
Other school		
No	256	82.1
Yes	56	18.0
Reasons for selected schools (more than 1 choice)		
Famous school		
No	131	42.0
Yes	181	58.0
Good chance for university entrance exams		
No	56	18.0
Yes	256	82.1
Family recommended to take the entrance exam		
No	176	56.4
Yes	136	43.6
Take an exam or come to take the exam with friends		
No	263	84.3
Yes	49	15.7
Satisfy levels with one's preparation		
The least or level 0	4	1.3
Level 1	4	1.3
Level 2	10	3.2
Level 3	27	8.7
Level 4	28	9.0
Level 5	33	10.6
Level 6	41	13.1
Level 7	77	24.7
Level 8	52	16.7
Level 9	18	5.8
The most or level 10	18	5.8

Mean = 6.2, SD = 2.2, Median = 7,
Mode = 7, Min = 0, Max = 10

Table 1. (Cont.) Student's demographics on five sections.

Factors	N	Percentage
Friends and environment section		
Want to study at a high school similar to a friend‡		
No	155	50.0
Yes	155	50.0
Relationship with friends		
The least (0)	1	0.3
Less (1)	2	0.6
Little (2)	15	4.8
Much (3)	57	18.3
More (4)	117	37.5
The most (5)	120	38.5
Mean = 4.1, SD = 0.9, Median = 4.0, Mode = 5, Min = 0, Max = 5		

‡N ≠ 312 due to missing data.

Regarding students' stress measured by SST-22, interestingly, more than half of grade 9 students from the current study had severe stress (62.8%) followed by 14.7% among them having high levels of stress. Slightly 9.9% was at a moderate level and 12.5% had mild stress (**Table 2**).

Chi-square test was used to examine the factors related to students' stress. We found various factors related to stress from five sections of demographics. Gender and age from the personal section were significantly related to stress. The family section included family debt and relationships with the family. The study effect on stress was the only significant factor in the study sections. The competitive examination section included family recommended to take the entrance exam, take an exam or come to take the exam with friends, and satisfy levels with one's preparation. The friends and environment section had not significantly related to students' stress (**Table 3**).

Logistic regression was applied to predict the correlation between the related factors and students' stress. The forward likelihood ratio was used to control external factors or other variables. The results showed that female students ($\beta = 0.9$, $P = 0.008$) can predict increasing stress compared to male students that finding might be related to gender roles. Compared to those students who had no family debt, the students in the family had debt ($\beta = 0.9$, $P = 0.011$) can predict the increase in their stress. Regarding studying and examination, students who indicated that studying affected their stress ($\beta = 1.9$, $P < 0.001$) and had moderate satisfaction levels with their preparation ($\beta = 1.0$, $P = 0.006$) had more stress than students who indicated that studying did not affect them and when to compare to students who had higher satisfaction levels with one's preparation. Lastly, students who had chosen the high schools due to take an exam or came to take the exam with friends ($\beta = -1.2$, $P = 0.003$) had lower stress than those students who did not (**Table 4**).

Table 2. Stress levels of students.

Stress levels (score)	N	Percentage
Mild (0 - 22)	39	12.5
Moderate (23 - 38)	31	9.9
High (39 - 56)	46	14.7
Severe (≥ 57)	196	62.8
Mean = 76.1, SD = 44.8, Median = 70.0, Mode = 50, Min = 0, Max = 200		

Table 3. The number and percentage of demographics and the related factors with students' stress.

Factors	Mild-moderate stress		High-severe stress		*P*-value
	N	Percentage	N	Percentage	
Personal section					
Gender					< 0.001*
Female	36	16.4	184	83.6	
Male and others	34	37.0	58	63.0	
Age (year)‡					0.035*
≤ 14	30	29.7	71	70.3	
≥ 15	40	19.1	170	81.0	
Congenital disease					0.808
Yes	11	21.2	41	78.9	
No	59	22.7	201	77.3	
Family section					
Brotherhoods‡					0.606
Yes	50	21.6	182	78.5	
No	19	24.4	59	75.6	
Average family income (Baht/month)‡					0.162
< 50,000	18	16.1	94	83.9	
50,000 - 99,999	11	22.0	39	78.0	
≥ 100,000	35	26.1	99	73.9	
Family debt					0.022**
Yes	16	15.0	91	85.1	
No	54	26.3	151	73.7	
Relationship with family					0.006*
The least to little	0	0.0	24	100.0	
Much to the most	70	24.3	218	75.7	
Study section					
Junior secondary school types					0.744
Coeducation	51	22.0	181	78.0	
Non coeducation	19	23.8	61	76.3	
GPAX‡					0.287
< 3.80	13	16.5	66	83.5	
3.80 - 3.89	14	22.2	49	77.8	
3.90 - 4.00	43	25.4	126	74.6	
Scholarship					
Yes	5	18.5	22	81.5	0.610
No	65	22.8	220	77.2	
Average hours spending on extra course (hour/week)‡					1.000
< 50	52	22.2	182	77.8	
≥ 50	16	22.2	56	77.8	
Selected subjects for extra course					
Mathematics					0.085
Yes	68	23.6	220	76.4	
No	2	8.3	22	91.7	
Physics					0.320
Yes	51	21.2	190	78.8	
No	19	26.8	52	73.2	
Chemistry					0.273
Yes	49	20.9	185	79.1	
No	21	26.9	57	73.1	
Biology					0.133
Yes	46	20.3	181	79.7	
No	24	28.2	61	71.8	
Thai subjects					0.340
Yes	34	25.0	102	75.0	
No	36	20.5	140	79.6	

Table 3. (Cont.) The number and percentage of demographics and the related factors with students' stress.

Factors	Mild-moderate stress		High-severe stress		*P*-value
	N	Percentage	N	Percentage	
Social studies					0.943
Yes	31	22.6	106	77.4	
No	39	22.3	136	77.7	
English subjects					0.580
Yes	51	23.3	168	76.7	
No	19	20.4	74	79.6	
Preference high school program					0.209
Science-mathematics program	66	23.4	216	76.6	
English-mathematics and language-arts program	4	13.3	26	86.7	
Studying affect to stress					< 0.001*
Yes	39	15.1	219	84.9	
No	31	57.4	23	42.6	
The most stressful time of studying					0.675
Studying at school	15	23.1	50	76.9	
Studying at tutoring school	13	18.6	57	81.4	
Reading and studying by oneself	42	23.7	135	76.3	
Competitive examination section					
Selected schools for pursuing high school education					
Triam Udom Suksa School					0.536
Yes	64	22.9	215	77.1	
No	6	18.2	27	81.8	
Mahidol Wittayanusorn School					0.635
Yes	41	23.4	134	76.6	
No	29	21.2	108	78.8	
Other schools					0.224
Yes	16	28.6	40	71.4	
No	54	21.1	202	78.9	
Reasons for selected schools					
Famous school					0.123
Yes	35	19.3	146	80.7	
No	35	26.7	96	73.3	
Good chance for university entrance exams					0.877
Yes	57	22.3	199	77.7	
No	13	23.2	43	76.8	
Family recommended to take the entrance exam					0.040**
Yes	23	16.9	113	83.1	
No	47	26.7	129	73.3	
Take an exam or come to take the exam with friends					0.025**
Yes	17	34.7	32	65.3	
No	53	20.1	210	79.9	
Satisfy levels with one's preparation					0.001*
Low levels	4	8.9	41	91.1	
Moderate levels	16	15.7	86	84.3	
High levels	50	30.3	115	69.7	
Friends and environment section Want to study at a high school similar to a friend‡					0.415
Yes	32	20.7	123	79.4	
No	38	24.5	117	75.5	
Relationship with friends					0.077
Low levels	1	5.6	17	94.4	
High levels	69	23.5	225	76.5	

*$P < 0.05$, **$P < 0.01$

Table 4. The prediction of the correlation between student's stress and the related factors analyzed by logistic regression.

Factors	β	SE (β)	*P* - value	Adjusted OR	95% CI	
					Lower	Upper
Female students	0.9	0.3	0.008*	2.4	1.3	4.6
Family had in debt	0.9	0.4	0.011**	2.6	1.2	5.3
Studying affect to stress	1.9	0.4	< 0.001*	6.6	3.3	13.3
Satisfy levels with one's preparation			0.013**			
Low levels	0.9	0.6	0.128	2.6	0.8	8.6
Moderate levels	1.0	0.4	0.006*	2.8	1.3	5.7
Reasons for chosen schools were taking an exam or came to take the exams with friends	-1.2	0.4	0.003*	0.3	0.1	0.7

*$P < 0.01$, **$P < 0.05$

Discussion

The grade 9 students who took an extra course for the admission exams of Triam Udom Suksa School and Mahidol Wittayanusorn School had high to severe levels of stress up to 77.6% with a mean 76.2. Results from the current study had a higher mean than previous studies from high school students in Bangkok, e.g., 51.6 [5] and 50.7. [14] Most of the students from previous studies had a high level of stress. Although, it was just an admission examination to the higher level of school. But those schools that have more potential to encourage their area of study, university, or dream career. Therefore, many students attempted to reach schools that support their future. Both schools have planned for a small number of admission students but the registered students have an enormous proportion than expected every year. This competition is not simple. Thus, they try too hard and bear the expectation. All pressure pushed them to higher levels of stress.

Thai family values encouraged and promoted their children to study in tutoring schools because just studying in the classroom might not compete with others. [15] Results from the current study showed that most students chose to study mathematics, physics, chemistry, biology, and English subjects. 90.4% of their preferred high school program was Science-Mathematics Program. Also consistent with, subjects who were related to mathematics and science subjects were the most subject that they chose to enhance their skill. According to Pluempitiwiriyawej K, Makanong A.'s results that compulsory graduated Thai students had lower Mathematic scores than the PISA average. [16] Also, Triam Udom Suksa School and Mahidol Wittayanusorn School are popular schools for the Science-Mathematics program. Consequently, the parents have to pay more support to their children by taking extra courses.

The factors of statistical significance associated with students' stress included gender, age, family debt, relationship with family, studying effect on stress, having reasons to choose the schools because family recommended taking the exams, taking the exams by themselves, taking the admission examination due to their friends, moderated satisfy levels with one's preparation. Subsequently, the related factors were examined by Logistic Regression; 70.5% of the subjects were female and 83.6% of females had severe stress according to Giota J, Gustafsson JE. [17] They expressed greater fear of failure than males in every education system on the PISA index's results. [18] Also, female students attempted to reach their higher goal by fulfill individual, parents, and social expectation. Previous studies showed subject achievement might vary by gender variation such as math self-concept and mathematics achievement. They found male students had higher math self-concept than females but females showed higher mathematics achievement than male. [19] Students with high level of educational resources and female students were more likely to achieve high academic outcomes. [20]

Family debt affected students' stress because they recognized that unstable finance among families could affect their academic future. In line with previous studies of Cadaret MC, Bennett SR [21], they indicated that higher levels of financial stress were associated with greater family distress, academic distress, overall distress, and lower grade point average. Thus,

increasing financial stress will increase academic distress and family stress. Moreover, academic distress had a strong influence on GPA. Consistent with Haque Rifat A, Jahan Bithi I [22], both male and female students were mentally stressed by socioeconomic status. Therefore, economic factors were the crucial factors related to stress levels. For a brighter future, parents forced their children to study hard to avoid the adverse situation.

The finding from this study on personal factors exhibited that the students who reported that studying affect them had more stress than those students who did not. The source of stress might come from their school, tutoring school, or studying by themselves. According to Wuthrich VM, *et al.*[23], they found a relationship between the number of hours that students spent studying and distress. More hours of studying were also associated with greater distress and negative mood. Therefore, dedicate most of their time to academic performance and taking extra courses might affect students' leisure time. Lack of leisure time and efficient time allocation could increase the stress that involves gender differences. [24, 25]

Students with moderated satisfaction levels on one's preparation could predict higher levels of stress when compared to students with high satisfaction. On the other hand, the low levels of satisfaction with one's preparation did not find statistical significance to predict stress. The results were relevant to goal setting, reading performance, self-efficacy, and fear of failure. [19] Consequently, students who expressed greater fear of failure scored higher on reading and also reported less satisfaction with themselves than students who were less concerned about failing. Fear of failure affected not only stress but also anxiety, burnout, and depression. [19]

Lastly, we found that students who had the purpose of taking the exams or came to take the exams with friends predict lower stress than the compared group. Some students participated in the competitive examination because they seek new challenges or assess their potential and knowledge. Less expectation for outcomes might decrease stress levels. Moreover, friends also played an important role to choose the high school. According to Rujirungsijareon N, *et al*. friends had a positive significant correlation with students' future and stress had a moderate correlation with the future. [25] Thus, students who choose the high school because of friends might involve peer acceptance.

Relevant sections including parents and teachers should encourage students to have stress management skills to reduce their stress levels such as stress management training. If their mind had more stress and anxiety they will over concerned and less concentrated for study. Those might impact their academic achievement and outcomes. Both parents and teachers should encourage them to take a break, giving them emotional support, or advice on stress management strategies. To manage stress, it was important for students to identify the sources of their stress and develop strategies for coping with it. Some effective strategies included time management, practicing self-care, seeking support from friends and family, and seeking professional help. This study has some limitations. The current study was a descriptive cross-sectional study focusing on grade 9 students who took extra courses from 9 tutoring schools located in the Siamscape and MBK building. They had a high intention to attend the competitive examination for Triam Udom Suksa School and Mahidol Wittayanusorn School. Therefore, it could not generalize to the students in other grades and the competitive examination for other schools.

Conclusion

More than three-quarters of the grade 9 students who took an extra course for the admission examination of Triam Udom Suksa School and Mahidol Wittayanusorn School had high to severe stress levels. The results provoked us to pay more attention to the vulnerable group. They are bearing huge expectations from themselves, their parents, teachers, friends, and society. Therefore, high competition will come with higher stress levels and related mental health issues. Gender differences should be a concern, especially for female students. Parents or family are not only crucial support but also schools and universities to provide resources and support for students who experience stress such as counseling services and academic support programs.

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Conflicts of interest statement

Each of the authors has completed an ICMJE disclosure form. None of the authors declare any potential or actual relationship, activity, or interest related to the content of this article.

Data sharing statement

The present review is based on the references cited. Further details, opinions, and interpretation are available from the corresponding authors on reasonable request.

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